

## **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions and listings of claims in the application.

### **LISTING OF CLAIMS**

1–18. (cancelled)

19. (currently amended) An electrolyzer system comprising:

a pressure vessel having an interior cavity;

an electrolyzer having a first side which is one of an anode side and a cathode side and a second side which is the other of said anode and cathode sides, said electrolyzer operable to convert water and electricity into a hydrogen-containing stream on said cathode side and an oxygen-containing stream on said anode side, said electrolyzer located in said interior cavity of said pressure vessel;

a pressurized water source operable to selectively supply pressurized water;

a flow path from said pressurized water source to said interior cavity of said pressure vessel, said interior cavity receiving pressurized water from said pressurized water source via said flow path and said pressurized water pressurizing said interior cavity of said pressure vessel; [[and]]

a pump located in said interior cavity of said pressure vessel, said pump having an inlet communicating with said pressurized water in said interior cavity, an outlet communicating with inlets on each side of said electrolyzer, and said pump

selectively supplies said pressurized water in said interior cavity to each side of said electrolyzer[[],];

a first fluid conduit communicating with said pump outlet and a first one of said inlets on said electrolyzer;

a second fluid conduit communicating with said pump outlet and a second one of said inlets on said electrolyzer; and

a flow regulator in said first fluid conduit operable to selectively regulate flow of pressurized water through said first fluid conduit supplied by said pump,

wherein said pressurized water in said interior cavity of said pressure vessel is supplied to both sides of said electrolyzer and said electrolyzer uses said pressurized water along with an electrical current to produce said hydrogen-containing stream and said oxygen-containing stream.

20. (previously presented) The system of claim 19, wherein each side of said electrolyzer has an inlet and an outlet, each inlet receiving said pressurized water from said interior cavity, said first side outlet being connected to a flow path that routes a first side stream out of said pressure vessel, and said second side outlet routing a second side stream into said interior cavity.

21. (original) The system of claim 20, further comprising a valve in said flow path from said first side outlet, said valve selectively allowing said first side stream to flow from said first side through said flow path out of said pressure vessel.

22. (original) The system of claim 21, wherein said valve regulates a pressure of said first side stream.

23. (original) The system of claim 21, further comprising a separator located in said flow path between said first side outlet and said valve, said separator separating said first side stream into at least a gas and liquid water, said separator having a first outlet through which said gas flows and a second outlet through which said liquid water flows, and said second outlet is connected to a flow path that directs said liquid water into said interior cavity of said pressure vessel.

24. (cancelled)

25. (original) The system of claim 19, wherein said source of pressurized water is a high pressure water pump.

26. (original) The system of claim 19, wherein said first side is said cathode side and said second side is said anode side.

27. (original) The system of claim 19, wherein said pressurized water supplied to at least one side of said electrolyzer is regulated.

28. (original) The system of claim 19, further comprising a level indicator indicating a level of said pressurized water in said interior cavity and wherein said pressurized water source selectively supplies said pressurized water based on said level of said pressurized water.

29. (currently amended) ~~The system of claim 19, further comprising~~ An electrolyzer system comprising:

a pressure vessel having an interior cavity;

an electrolyzer having a first side which is one of an anode side and a cathode side and a second side which is the other of said anode and cathode sides, said electrolyzer operable to convert water and electricity into a hydrogen-containing stream on said cathode side and an oxygen-containing stream on said anode side, said electrolyzer located in said interior cavity of said pressure vessel;

a pressurized water source operable to selectively supply pressurized water;

a flow path from said pressurized water source to said interior cavity of said pressure vessel, said interior cavity receiving pressurized water from said pressurized water source via said flow path and said pressurized water pressurizing said interior cavity of said pressure vessel;

a pump located in said interior cavity of said pressure vessel, said pump having an inlet communicating with said pressurized water in said interior cavity, an outlet communicating with inlets on each side of said electrolyzer, and said pump selectively supplies said pressurized water in said interior cavity to each side of said electrolyzer; and

a pressure indicator indicating a pressure in said interior cavity,

wherein said pressurized water in said interior cavity of said pressure vessel is supplied to both sides of said electrolyzer and said electrolyzer uses said pressurized water along with an electrical current to produce said hydrogen-containing

stream and said oxygen-containing stream and wherein said pressurized water source selectively supplies said pressurized water based on said pressure in said interior cavity.

30. (original) The system of claim 19, further comprising:  
a flow path from an upper portion of said interior cavity out of said pressure vessel through which gas in said upper portion can flow; and  
a valve in said flow path from said upper portion, said valve selectively allowing said gas to flow through said flow path and out of said pressure vessel.

31. (previously presented) The system of claim 30, wherein said valve and said source of pressurized water control a pressure in said interior cavity.

32. (original) The system of claim 19, wherein said interior cavity is pressurized to greater than about 5,000 psi.

33. (original) The system of claim 19, wherein said interior cavity is pressurized to greater than about 10,000 psi.

34. (original) The system of claim 19, wherein a pressure difference between said anode and cathode sides is less than about 2,000 psi.

35. (original) The system of claim 19, wherein said electrolyzer is submerged in said pressurized water in said interior cavity.

36–43. (cancelled)

44. (previously presented) The system of claim 22, further comprising a pressurized storage device to which said flow path leads and wherein said valve is a closed-loop regulator that regulates said pressure of said first side stream by selectively allowing said first side stream to flow into said pressurized storage device through said closed-loop regulator by comparing said pressure in said first side of said electrolyzer with a pressure in said pressurized storage device.

45. (currently amended) An electrolyzer system comprising:

- a pressure vessel having an interior cavity;
- an electrolyzer having a first side which is one of an anode side and a cathode side and a second side which is the other of said anode and cathode sides, said electrolyzer operable to convert water and electricity into a hydrogen-containing stream on said cathode side and an oxygen-containing stream on said anode side, said electrolyzer located in said interior cavity of said pressure vessel;
- a pressurized water source operable to selectively supply pressurized water ~~at a pressure greater than about 5,000 psi;~~
- a flow path from said pressurized water source to said interior cavity of said pressure vessel, said interior cavity receiving pressurized water from said pressurized water source via said flow path and said pressurized water pressurizing said interior cavity of said pressure vessel ~~to greater than about 5,000 psi;~~ and
- a pump operable to circulate pressurized water in said interior cavity through said cathode and anode sides of said electrolyzer, operation of said pump generating a continuous flow of pressurized water through said anode side of said electrolyzer and ~~a selective~~ an intermittent flow of pressurized water through said cathode side of said electrolyzer, and said electrolyzer uses said pressurized water along with an electrical current to produce said hydrogen-containing stream and said oxygen-containing stream.

46. (cancelled)



47. (currently amended) The system of claim ~~[[46]]~~ 19, wherein said first one of said inlets on said electrolyzer is a cathode inlet to said cathode side of said electrolyzer and said second one of said inlets on said electrolyzer is an anode inlet to said anode side of said electrolyzer.

48. (previously presented) The system of claim 47, wherein during operation of said pump a continuous flow of pressurized water flows through said anode side.

49. (currently amended) The system of claim ~~[[46]]~~ 19, further comprising a check valve in said first fluid conduit between said pump outlet and said first one of said inlets.

50. (currently amended) ~~The system of claim 19,~~ An electrolyzer system  
comprising:

a pressure vessel having an interior cavity;

an electrolyzer having a first side which is one of an anode side and a  
cathode side and a second side which is the other of said anode and cathode sides,  
said electrolyzer operable to convert water and electricity into a hydrogen-containing  
stream on said cathode side and an oxygen-containing stream on said anode side, said  
electrolyzer located in said interior cavity of said pressure vessel;

a pressurized water source operable to selectively supply pressurized  
water;

a flow path from said pressurized water source to said interior cavity of  
said pressure vessel, said interior cavity receiving pressurized water from said  
pressurized water source via said flow path and said pressurized water pressurizing  
said interior cavity of said pressure vessel; and

a pump located in said interior cavity of said pressure vessel, said pump  
having an inlet communicating with said pressurized water in said interior cavity, an  
outlet communicating with inlets on each side of said electrolyzer, and said pump  
selectively supplies said pressurized water in said interior cavity to each side of said  
electrolyzer,

wherein said pressurized water in said interior cavity of said pressure  
vessel is supplied to both sides of said electrolyzer and said electrolyzer uses said  
pressurized water along with an electrical current to produce said hydrogen-containing  
stream and said oxygen-containing stream and wherein said cathode side of said

electrolyzer can be selectively isolated from said interior cavity to prevent fluid communication between said cathode side and said interior cavity.

51. (previously presented) The system of claim 47, wherein said flow regulator is a valve.

52. (currently amended) The system of claim ~~[[46]]~~ 19, wherein said second fluid conduit is unimpeded.

53. (previously presented) The system of claim 45, further comprising:  
a first fluid conduit communicating with an outlet of said pump and said cathode side of said electrolyzer;  
an unimpeded second fluid conduit communicating with said outlet of said pump and said anode side of said electrolyzer; and  
a flow regulator in said first fluid conduit operable to selectively regulate flow of pressurized water through said first fluid conduit supplied by said pump.

54. (previously presented) The system of claim 53, further comprising a check valve in said first fluid conduit between said pump outlet and said cathode side of said electrolyzer.

55. (previously presented) The system of claim 54, wherein said pump is disposed within said interior cavity.

56. (previously presented) The system of claim 45, wherein said pump is disposed within said interior cavity.